

## Fluoride FAQs

### What is fluoride?

Fluoride is a naturally occurring mineral that is found in all natural water sources. Fluoride may be used to reduce teeth enamel's susceptibility to acid, thus reducing caries. It has been added to public water sources in the United States since 1945 starting in Grand Rapids, Michigan. In parts of the world where public drinking water is not fluoridated it has been added to table salt. Fluoride is also added to many oral hygiene products such as toothpaste and mouthrinse to help reduce caries. Fluoride varnish is applied in dental offices as a supplement to other sources of fluoride.

### How does fluoride protect teeth?

Before teeth break through the gums (erupt), the fluoride taken in from foods, beverages and dietary supplements makes tooth enamel (the hard surface of the tooth) stronger, making it easier to resist tooth decay. This provides what is called a "systemic" benefit. After teeth erupt, fluoride helps rebuild (remineralize) weakened tooth enamel and reverses early signs of tooth decay. When you brush your teeth with fluoride toothpaste, or use other fluoride dental products, the fluoride is applied to the surface of your teeth. This provides what is called a "topical" benefit.

### Why do dental professionals apply fluoride at my visit?

Topical fluoride applied during dental visits are more concentrated than rinses and self-applied fluorides. Fluoride mouthrinses and gels have concentrations between 200-900 parts per million. Self-applied fluorides have concentrations between 1,000-5,000 parts per million. Professionally applied fluorides have concentrations between 9,000-12,000 parts per million.

### What is fluorosis and when is too much fluoride a problem?

A potential risk of fluoride use is the development of fluorosis, which may result from excessive fluoride ingestion during tooth development. Teeth with fluorosis have white to brown stains integrated into the enamel. Fluorosis of permanent teeth occurs when an excess quantity of fluoride is ingested for a sufficient period of time during the time that tooth enamel is being mineralized. The level of fluoride intake between the ages of about 15 and 30 months is thought to be most critical for the development of fluorosis of the maxillary central incisors. Enamel fluorosis occurs only when primary and permanent teeth are developing. Once teeth erupt, they cannot develop enamel fluorosis. Excess fluoride exposure can be minimized by using the recommended amount of toothpaste and by storing toothpaste where young children cannot access it without parental assistance.

### Is fluoride toxic?

No. Fluoride in water or professionally applied at the recommended level is not toxic according to the best available scientific evidence. Toxicity is related to dose. While large doses of fluoride could be toxic, it is important to recognize the difference between the effect of a massive dose of an extremely high level of fluoride versus the fluoride level currently recommended. Like many common substances essential to life and good health - salt, iron, vitamins A and D, chlorine, oxygen and even water itself - fluoride can be toxic in massive quantities. The single dose (consumed at one time) of fluoride that could cause acute fluoride toxicity is 5 mg/kg of body weight of sodium fluoride. For example, for an average 155 pound adult male, it would require that he consume more than 120 gallons of water or 3 tubes of toothpaste at one time to reach an acute fluoride dose. Kids would need to consume between 50-100% of an entire tube of toothpaste depending on age/weight at one time to reach an acute fluoride dose.

### Where can I find more information about fluoride?

Please read the following articles from the American Dental Association (ADA) about fluoride and its uses.

<https://www.ada.org/en/resources/community-initiatives/fluoride-in-water/fluoridation-faqs>

<https://www.ada.org/en/resources/ada-library/oral-health-topics/fluoride-topical-and-systemic-supplements>